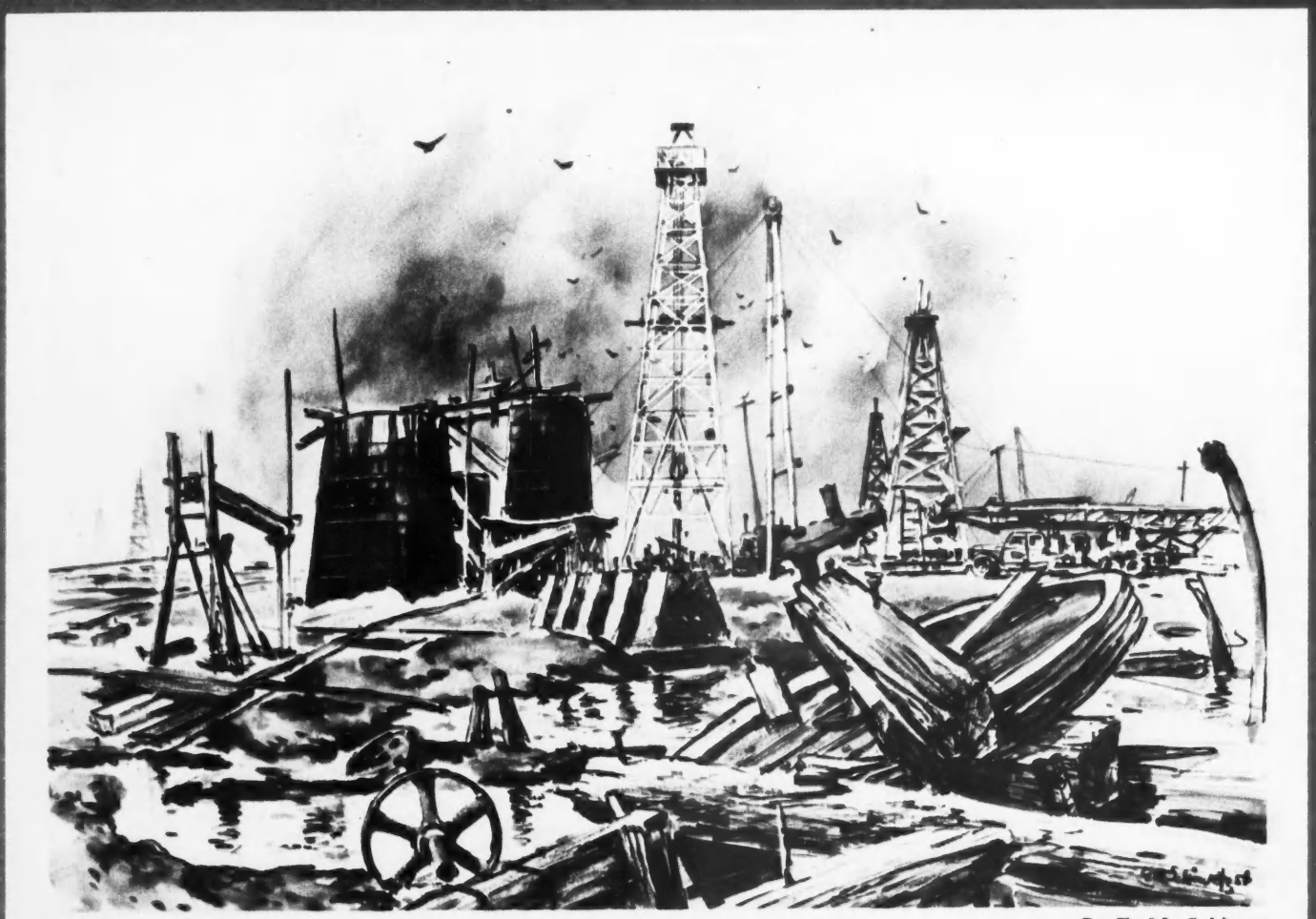

Spindletop Souvenir — *By E. M. Schiwetz*

The HUMBLE WAY

JANUARY-FEBRUARY, 1951

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VOL. VI No. 5

BAYTOWN'S RESEARCH CENTER

THIS year, climaxing more than a quarter-century of progress and accomplishment, Baytown Refinery research moved into a new home—the Humble Refining Research Building. The new building joins pilot units and service facilities in the adjacent area to make up the Baytown Research Center.

To many, the new building is a dream come true. Everything in it was designed to give maximum comfort and convenience, as well as to make work more efficient. On each of three main floors, an off-center hallway running the length of the building separates laboratories on the deep side from offices on the narrow side. With an eye to flexibility, movable partitions between laboratories are arranged in such manner that any laboratory can be made larger or smaller, as the current research project dictates. In addition to offices and laboratories, there are a well-stocked library and reading rooms, two large conference rooms which can be combined when necessary, locker and shower rooms, and a lunch room.

From the very first, research has been an important part of Baytown Refinery activity. Organized research began in 1924, when the plant was only four years old, but even before that a system of "organized fact finding" was carried on by Humble technologists. These early workers contributed much to the development of vacuum distillation techniques, the treatment of lube oil emulsions, and the design of equipment.

Through the years, the first small group of researchers has grown to approximately 450 people, of whom about 95 are technical men. As the staff and volume of work grew, so did the budgets set up for refining research.

And what is Baytown Refinery getting for money spent on research? The list of achievements is impressive, proving that research pays off. Among the first successes were a number of improvements and developments in the distillation, or fractionation, processes which split oil into its component parts. Baytown Refinery was one of the first to install bubble towers—more efficient than the types of fractionation units previously used. Later, a "superfractionation" process was developed which took low-octane fractions and separated them into special compounds for chemicals and into high-octane fractions.

Baytown Refinery in 1938 became the first commercial producer of *alkylate* in the world. A hydrocarbon liquid with an extremely high octane number, alkylate is rightly called the "backbone" of aviation gasoline. Humble research men did significant pioneering work on alkylate, and Baytown Refinery was the largest single supplier of high octane aviation gasoline during World War II.

In 1940 Humble began building for the government a plant to produce nitration grade toluene, the final "T" in the explosive, TNT. This plant combined efficient superfractionation and solvent extraction processes developed in earlier Humble research with hydroforming, a new process for synthesizing toluene from petroleum raw materials. The Baytown Ordnance Works not only became the nation's principal source of toluene during World War II, but also furnished valuable by-products for aviation gasoline.

Humble is a leader today in the field of premium lubricating oils because Company research found ways to remove undesirable asphalt and wax from some crude oils well suited to production of high quality lubricants. Modern refining equipment is combined with this research to give Baytown a position of leadership in premium motor oil production.

Humble's policy of vigorous research has benefited both the Company and the consumer. As contrasted with the old days, petroleum is now the raw material from which comes a whole new host of products to make our lives easier and more pleasant: plastics, detergents, carbon black, synthetic fibers, synthetic rubber, refrigerants, anti-freeze, solvents—as well as huge supplies of high quality gasolines and lubricants.

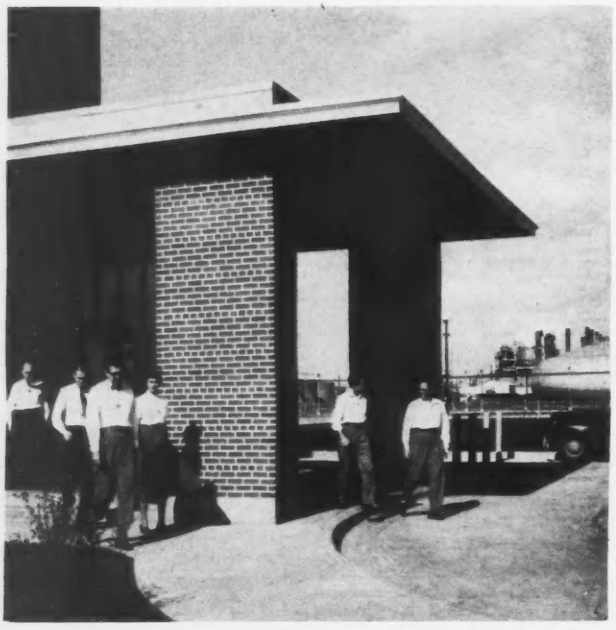
But the value of research and development can be recognized by looking even closer to home. Hardly a major process unit at Baytown Refinery has not been either pioneered or significantly improved as a result of Humble research.

While these are past accomplishments, they foreshadow the possibilities of the future. The new Humble Refining Research Building, an expression of faith in the continued success of research, will help convert those possibilities into realities. And although research is never predictable, it is certain that steady and aggressive work will keep Humble among the leading, progressive petroleum refiners.

In the shadow of giant operating units that research helped to build, a laboratory worker obtains data in the new research building.

The new Research Building joins pilot units and service facilities in the adjacent area to make up the Baytown Research Center. Planned by experienced designers of industrial research laboratories, the building meets housing needs of the research group today and fits into plans for the future. To Baytown researchers, the new building is a dream come true.

Research in Action

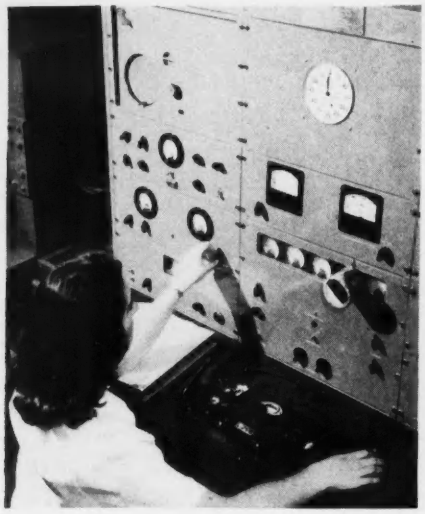


A talented group of scientists, ably assisted by efficient technicians, mechanics, and clerks, carries on research projects.

To those who work in the Baytown Research Center, research means learning more about crude oil and natural gas, the raw materials of the petroleum industry.

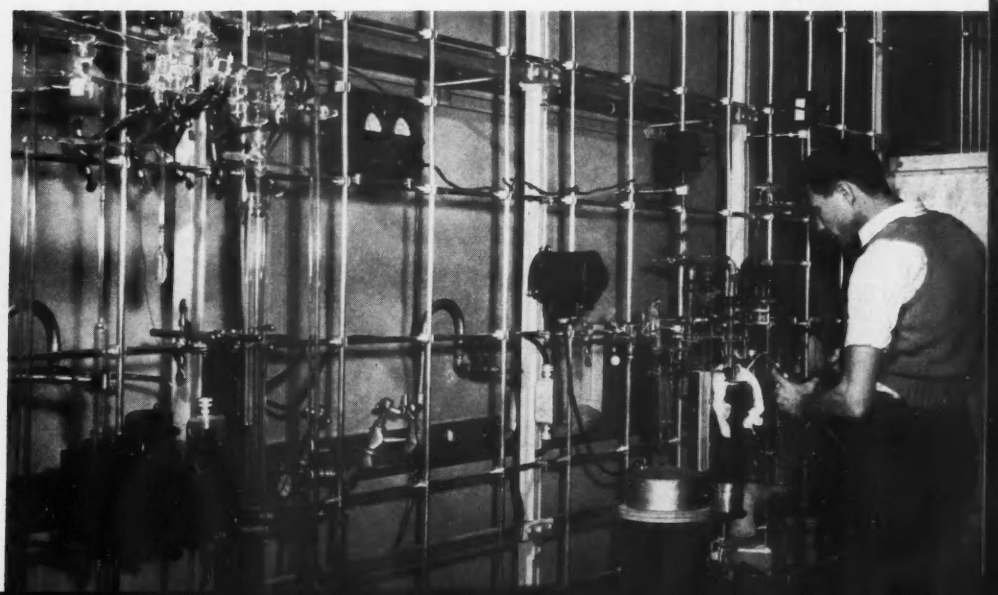
The men and women on these pages carry out four major types of research: fundamental, exploratory, analytical, and development work. *Fundamental* research seeks answers to basic questions of how and why matter behaves as it does. *Exploratory* research is exactly what the name implies; it deals with new ideas and sifts out those which appear worthy. *Analytical* research is chiefly concerned with the composition of matter. In this work, Humble has pioneered successfully with newer, advanced physical instruments of analysis. Among these are the mass and emission spectrometers, the X-ray diffraction unit, the polarograph, and the infrared and ultraviolet spectrophotometers. *Development* work, use of pilot plants which simulate operation of large units, evaluates ideas which show encouraging possibilities.

Some idea of the variety of research projects undertaken at the Baytown Research Center, and of the facilities necessary, may be had from these facts: Pressures may range from 1000 pounds to a ten-millionth pound per square inch. Temperatures may range from 2000 degrees Fahrenheit to 300 degrees below zero Fahrenheit. Contact time may range from many hours, or even months, to millionths of a second.



In analytical research, Humble has pioneered with outstanding success, using such physical instruments of analysis as the mass spectrometer, left. Above, researchers study information in the Technical Library housed on the first floor of the new Building.

Humble Lectures in Science, above, bring the nation's top scientists and educators to Baytown several times a year to keep research and technical people abreast of new developments in their field. At left, exploratory research is carried on with bench-scale equipment. The apparatus below is used in fundamental research on adsorption.



Transport trucks deliver gasoline from ten strategically located terminals to wholesale outlets or direct to service stations in all of Humble's marketing area. Packaged goods are delivered by vans only to wholesale distributing points.

HUMBLE PRODUCTS
Move to Market

HUMBLE'S post-war product distribution system, not unique but successful, uses all of the proven methods of fast, economical transport.

The key to the system's success is the products pipe line built by Humble Pipe Line Company from Baytown Refinery to North Texas in 1946. To supplement that line, Humble uses Company and contract transport trucks, vans, and barge lines along the coast to move products to Texas markets.

All of these transportation methods are tied together into a workable system, by a Company network of eight major terminals—each a storage and distribution center. The terminals are located at Houston, North Houston, Corpus Christi, Brownsville, San Antonio, Hearne, Waco, and Irving (between Dallas and Fort Worth). A ninth Company terminal is now under construction at Austin. Two other supply centers in West Texas handle the needs of the far western market outlets.

From each of these terminals transports haul gasoline and other light products to points of local distribution.

Naturally, the building of such a system required time and large capital investments. It was started early in 1946 and was not completed until the San Antonio Products Terminal was opened in October, 1950.

The first step in the program was the building of four terminals on the products line while the line itself was still under construction. These were finished in late 1946 and early 1947 and brought the main population centers in the heart of the state within truck transport range.

Next came low-cost water transportation. At the Port of Corpus Christi, terminal facilities were arranged for in 1945. When the Intracoastal Canal was extended from there to Brownsville on the southern tip of Texas in 1949, another products terminal was built there to serve the Rio Grande Valley area. Both terminals are supplied from Baytown refinery by barge lines.

Early in 1950, when pipe line facilities to San Antonio became available, Humble began construction of another major terminal in that city. In the same year a large new bulk station-terminal was completed in Houston, and later in the year a new Dallas bulk station, built adjacent to the North Texas products line terminal, was opened.

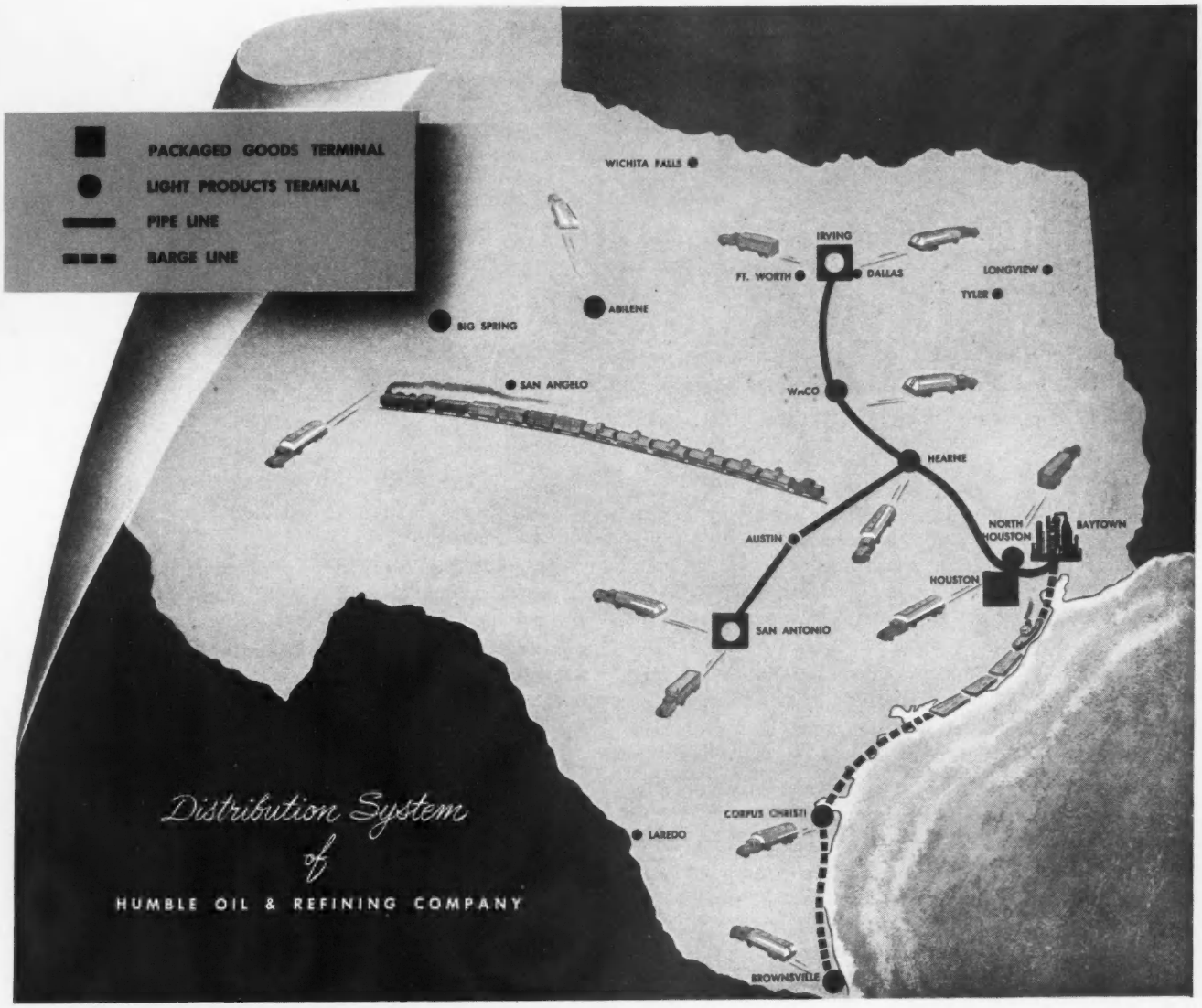
These completed the planned system of terminals. Transport trucks now supply Humble's entire marketing area from the 10 terminals.

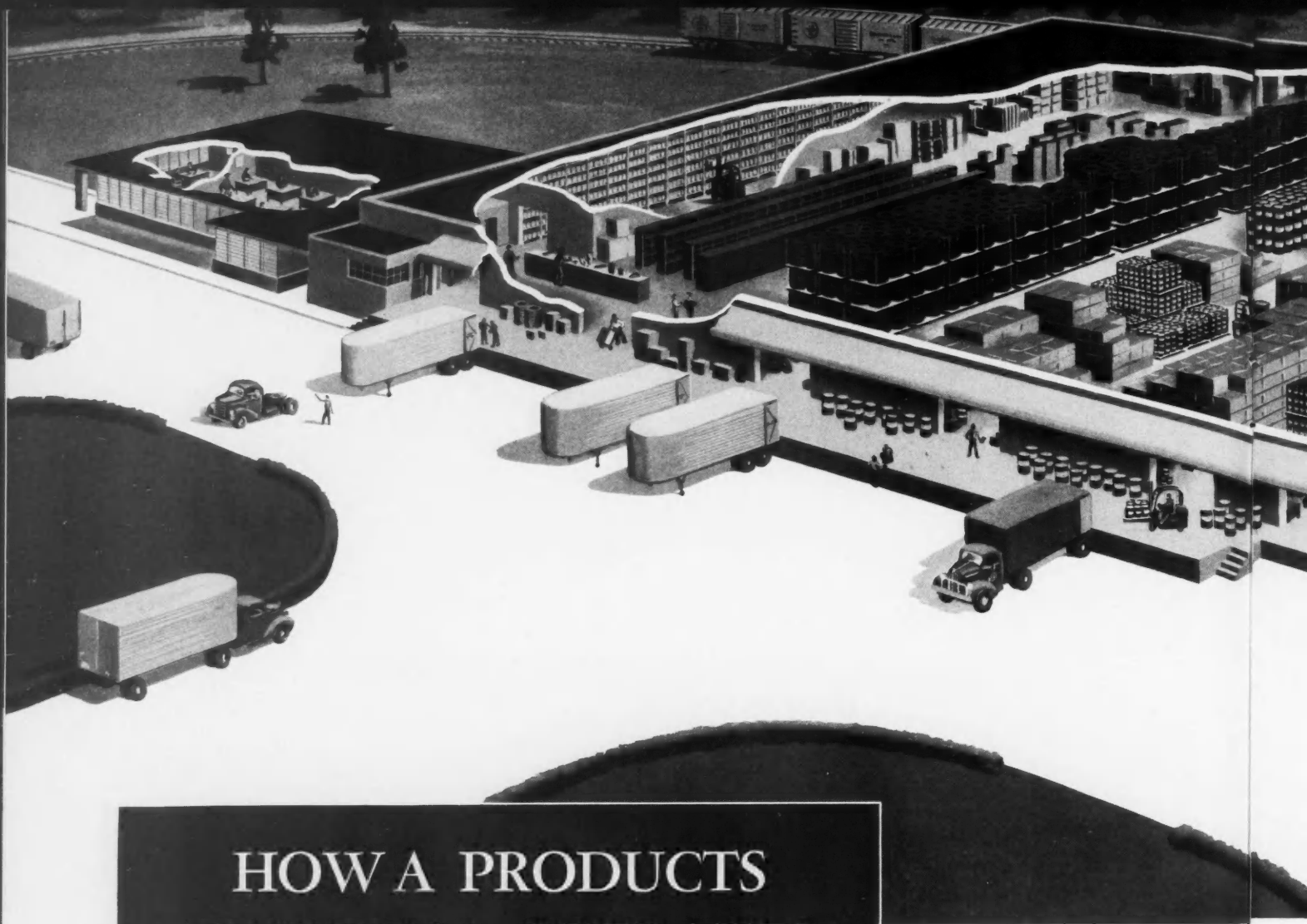
Packaged goods—barreled and canned motor oils, greases, tires, batteries, accessories, and other supplies—are handled in like manner. These products can be trucked from central supply depots over even greater areas than is practical for gasoline and other light products. So, it was necessary to use only three of the most suitably located terminals as packaged goods centers. From Houston, San Antonio, and Dallas terminals, big vans reach out over most of Texas. They are literally moving warehouses. Planned routing makes it possible for the vans to fill orders within 10 days, and eliminates the need for large stocks in local bulk stations.

But before the light products and packaged goods distribution systems could be made efficient, personnel had to be trained and sound methods developed.

A program to bring the new philosophy of distribution to operating personnel was started almost four years ago. Bulk agents, local managers, warehouse supervisors, truck drivers, and maintenance men participated in clinical meetings. They saw educational films, and through group discussions helped develop many of the operating methods in use today. This program is a continuing one. New methods are constantly being tested and studied in the search for greater efficiency.

After almost five years of experience, results show that the integrated distribution system is sound and economical; that it makes possible fast and low-cost delivery of products of uniform quality to the far corners of Humble's marketing area in Texas.





HOW A PRODUCTS TERMINAL OPERATES

HUMBLE Products Terminals are like Army Supply Depots. A constant flow of fresh products arrives by pipe line, barge, or railroad. These products are unloaded, temporarily stored, and then are classified and assembled into shipments and dispatched to wholesale and retail outlets far away.

Seven of the 10 terminals receive and distribute liquid products only. The other three—at Dallas, Houston, and San Antonio—are master terminals such as shown here, handling both liquid products and package goods.

Gasoline of various grades and kerosene arrive by pipe line. Heating oils, diesel fuels, and naphtha come in by tank car, as do some grades of motor oil and industrial oil. All go into terminal storage to be shipped out by transport trucks, or to be barreled for delivery by vans or stake trucks.

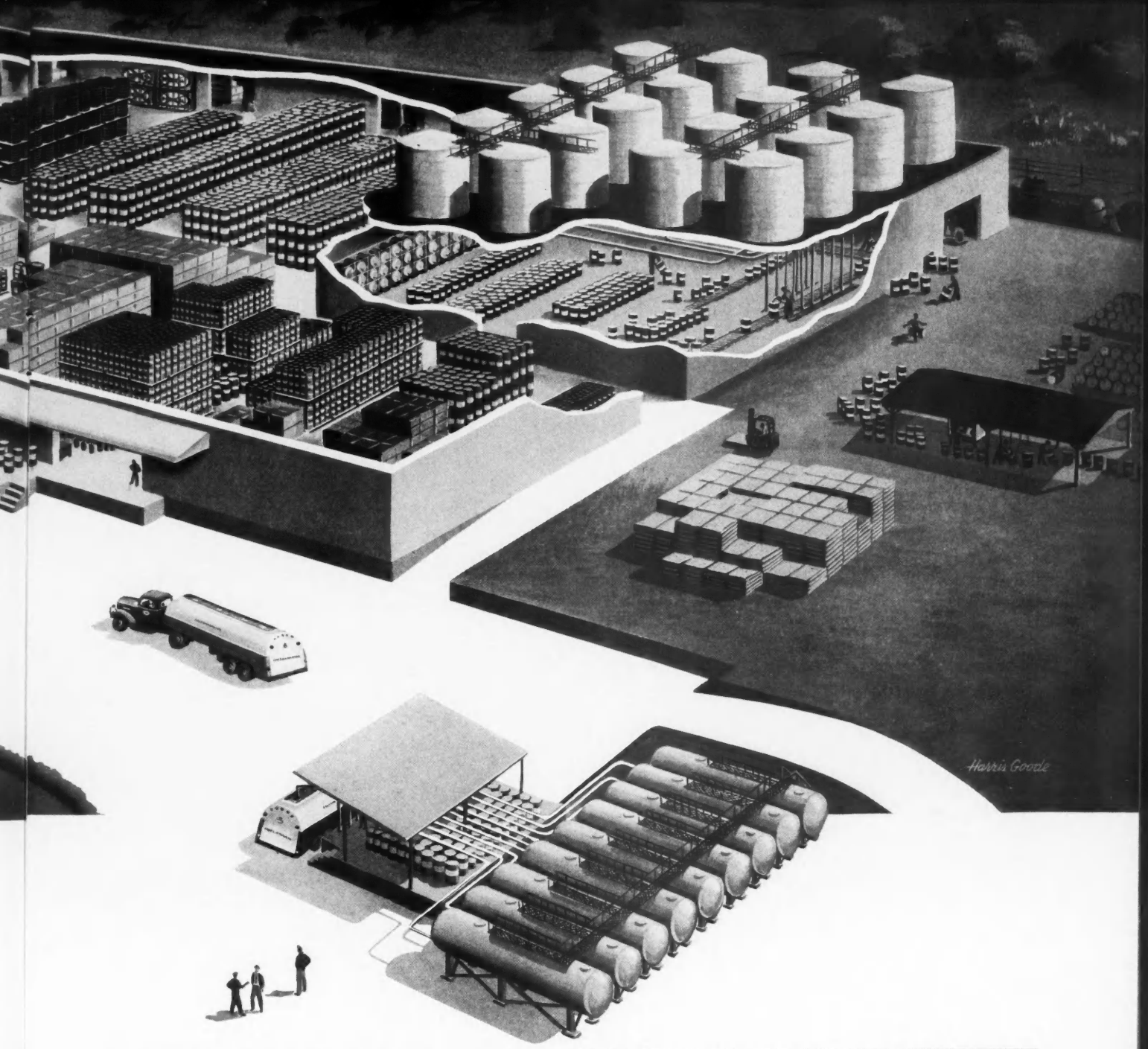
Canned oils, greases, tires, batteries, accessories and such supplies as soap, cleaning compound, and paper goods arrive by box car. As these are unloaded they are arranged on wooden pallets and are stacked high in the warehouse by fork lift trucks.

Orders for products come from consumers, bulk stations, or service stations by mail or telephone. In the office these orders are processed and passed to the dispatching section where truck schedules are made up. In turn, the orders move to the loading rack or the warehouse for filling.

If the order is for light products in transport lot the trucks can be loaded and dispatched in a matter of 15 to 20 minutes. If the order involves a variety of products for movement by van, it will probably require some five hours to assemble and load the various materials.

Loading the big vans, which have a 27,000-pound capacity, is speeded up by the use of endless rollers for handling barrels and lift trucks for moving palletized products.

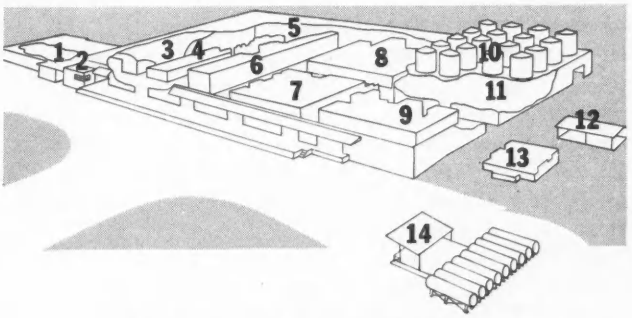
Each terminal has a barrel reconditioning section where empties returned by vans or by rail are cleaned, checked, and repainted before going back into service.



Each terminal also has a garage, where all motor equipment is maintained and repaired. At the Houston, San Antonio, and Dallas Terminals the garage building also includes a section where skilled mechanics repair electric gasoline pumps, air compressors, and similar equipment used at bulk and service stations. Parts are stocked in these sections and are shipped on order.

The volume of product moving through a typical terminal is enormous. For example: Houston Terminal receives an average of 40 box cars and 60 to 65 tank cars each month. Outgoing volume for vans only from this terminal was more than three million pounds a month during 1950. Light petroleum products moving into and out of the Dallas Terminal average in excess of 10 million gallons a month.

To keep this volume of product moving requires coordination of all units of terminal employee groups.



KEY TO TERMINAL OPERATIONS

1. Terminal Office; 2. Dispatcher's Office; 3. Batteries; 4. Accessories; 5. Service Station Equipment and Supplies; 6. Tires; 7. Canned Motor Oils; 8. Barreled Oils; 9. Greases and protective Coatings; 10. Bulk Oil Storage Tanks; 11. Barrel Filling Section; 12. Barrel Cleaning and Recondtioning Section; 13. Extra Pallets; and 14. Light Products Barrel Filling and Transport Loading Dock.

NEEDED:
Safe Driving Attitudes

By A. Ross Rommel
Asst. Chief Safety Engineer

TRAFFIC accidents are reaping a grim harvest of death, destruction, and heartbreak every day on the streets and highways of America. Since the present war began, more Americans have been killed and injured in traffic accidents than United Nations troops have been killed and injured on the battlefields of Korea. Surely that terrible truth is enough to make anyone stop and think seriously about the problem! What can be done to reduce these accidents which cause such a shocking loss of life, limb, and property?

First, we must ask ourselves what *causes* the carnage. In only a relatively few cases is it defective equipment. No, we must face the discouraging facts: Most traffic accidents are caused *by the actions of people, principally through unsafe driving attitudes.* Clearly, then, the thing that needs to be done is to develop safe driving attitudes.

The unsafe driver may be reluctant to admit it, but he is generally guilty of three driving sins: haste, discourtesy, and a complete ignorance of what his car will do under certain conditions and at certain speeds. Watch him weave daringly in and out of traffic lanes. Sooner or later, his depth perception and sense of timing will fail him. Watch him ride the bumper of the car in front. It takes at least *25 to 30 feet to stop a car going only 20 miles an hour,* but he either doesn't know that or pays no attention to it. There isn't a chance in the world for him to avoid a wreck if the man in front stops suddenly, as he may have to do. And all for what? How much time does the unsafe driver save by such "hurrying" tactics? Probably no more than four or five minutes a day!

Then there's the matter of traffic courtesy (or lack of it), which has even the psychologists shaking their heads. What makes many a normally courteous fellow snarl and sneer at others the minute he gets behind a steering wheel? Some who leap nimbly to their feet to give a lady a seat on the bus develop into teeth-gnashing terrors at a crowded intersection. Others who hasten to pick up packages for a lady refuse to yield an inch when another driver tries desperately to make the inside lane for a right-hand turn. Two affable gentlemen, who so graciously wave each other into the office elevator at eight in the morning, may be at swords points if one so much as brushes the other's fender at five in the afternoon. It's a strange Jekyll-and-Hyde condition, perhaps one outgrowth of the stepped-up tempo of daily living. And it can cause trouble—serious trouble.

Agreed that safe driving attitudes need to be developed in the great majority of drivers, just *how* can they be developed? There are at least three ways: by punishment for offenders, by sad experience, and by driver education and training.

Punishment may work well enough as a means of improving driver attitudes in some cases, but it reaches only a few of those who actually violate laws or drive carelessly. If punishment alone were depended upon to improve the driving attitudes and habits of the great majority it would take more traffic officers than tax-payers could support.

Last year in Texas, 2400 people were killed in automobile accidents. Another 70,000 were injured. Some 3000 vehicles were involved in fatal accidents.

Sad experience—literally the "school of hard knocks"—is the least desirable and effective way of all. In many cases, it happens too late to do any good. Always, it is tinged with remorse and bitterness—with the tragic knowledge that "it need not have happened." Too often, the victim never gets another chance to use what he has learned.

By far the best and most intelligent approach to developing safe driving attitudes, then, seems to be *driver education and training.* This, admittedly, is a long-term proposition, but it can be done. As a matter of fact, it is *being done;* driver education and training is already offered in many of the nation's high schools. A generation from now, these programs should produce a well-informed group of mature drivers with proper attitudes. (See "Training Teen-Age Drivers,"

To understand these terrible figures fully, look at the football stadium above. Blocked out in color at the upper end of the stadium are 2400 people, the number killed. Everyone else in the stadium may be considered among the injured. Cars blocked out in color represent the 3000 vehicles involved in fatal accidents. In addition to this, there was a $96 million property loss.

THE HUMBLE WAY, May-June, 1949. Copies free upon request.)

Many businesses have recognized the urgent need for driver education and training for those who drive company equipment. Humble is now completing a comprehensive program, carried to everyone who drives a Company vehicle on a full-time or even a part-time basis. This program began early in 1950, fundamentally pitched toward *driver attitudes*. Common courtesy applied to driving practices was heavily stressed. Drivers were given the opportunity to check their visual qualifications, knowledge of traffic laws, reflex actions, stopping and reaction distances, and other factors which a solidly safe driver should know about himself and his vehicle. Such a program undoubtedly contributed to the reduction of 17 per cent in the accident experience of Humble drivers in 1950.

In 1925, some 20 million motor vehicles travelled American streets and highways. Today, only 26 years later, that number has more than doubled. Driving techniques and habits have not kept pace with this tremendous increase in number—to say nothing of the increased speed and power of modern automobiles. Driving is so simple and easy that the majority of us "go through the motions" without realizing what we are doing, little realizing that a matter of a few feet, or even inches, can mean the difference between life and sudden death.

Development of a wise and proper driving attitude will do much to make us *think as we drive* . . . to show us the futility of trying to save time by hurrying in traffic . . . to make us recognize and respect the rights of others . . . to point out the sobering facts of what our car will do at certain speeds and under certain conditions. Driver education and training can develop such attitudes. It will take time and effort, but it will be worth it.

SPINDLETOP—

A Review of 50 Years of Progress

ON JANUARY 10, oil men from all over the world gathered at Beaumont to observe the Golden Anniversary of the Spindletop oil field, three miles outside the city.

Spindletop was worth a celebration. Here, exactly 50 years ago, the world's first great oil "gusher"—the famous Lucas well—had "blown in" making an estimated 75,000 to 100,000 barrels a day before it was finally brought under control. Nothing like the Lucas gusher had ever been seen before. Up to that time, a well that produced 50 barrels a day was considered big. In fact, the total oil production in this country in 1900, a year before Spindletop, was only 63 million barrels—less than 200,000 barrels a day.

At Spindletop, oil become an industry. Although people did not realize it at the time, the Lucas discovery was the beginning of entirely new economic and social systems for America. The significant story is simply told on the granite shaft that marks the well-site:

ON THIS SPOT
ON THE TENTH DAY OF THE TWENTIETH CENTURY
A NEW ERA
IN CIVILIZATION BEGAN

It *was* a new era in civilization. And here is how it began:

The man who first became convinced there was oil at Spindletop was Patillo Higgins, who had begun his career as a logger on the Neches River. As a real estate man and manufacturer, he became interested in the peculiar earth formations at Sour Wells, or Spindletop Springs. Noting natural seepages here and there, he took a long steel rod and began to probe different places on the "Hill." Some of the holes yielded enough gas to catch on fire when a match was held to the opening. It was a likely looking place, he thought, to search for oil.

Higgins' interest in the possibility of oil at Spindletop was more than a mere natural curiosity. He needed fuel to bake bricks produced by the Higgins Manufacturing Company. Even at that time, pine timber was expensive fuel. Believing there was "oil out in that hill," Higgins bought a U. S. Geological Survey book and studied it carefully. His opinions became convictions; there was oil under the "Hill."

The first well at Spindletop was drilled by the Gladys City Oil, Gas and Manufacturing Company, of which Higgins was treasurer and general manager. Quicksand was struck at 300 feet and the well had to be abandoned. A second well ended in identical failure.

By this time, the backers were pretty well discouraged, but Higgins' faith remained undaunted. He advertised in a large eastern newspaper and immediately caught the interest of Capt. Anthony Lucas, an Austrian-born mining engineer living in Washington, D. C. Lucas was perhaps the earliest authority on salt domes, the type of geologic structure at Spindletop. He had spent several years as an engineer for a Louisiana salt company, and had studied the salt domes of that area. In that time, he had formed the theory that a close relationship might exist between salt domes and the presence of oil and other minerals. Lucas reasoned that when giant domes and plugs of salt pushed up from below, they disturbed earth formations above them and on the flanks. These changes produced traps in which oil accumulated. The Spindletop dome furnished proof of this reasoning.

The first well drilled by Lucas at Spindletop was lost in quicksand at 575 feet. Some oil had been bailed out before the well was lost, however, and with a small bottle of that oil Lucas and his fellow pioneers began to look for financial backing to drill another well. After several failures, they found backing in Pittsburgh, where they aroused the interest of J. M. Guffey and J. H. Galey, men who had already become affiliated with the oil business in Pennsylvania fields. The J. M. Guffey Company of Beaumont was formed, and late in 1900 the new company began to drill another well, with Lucas using a crude form of hydraulic rotary drill, the forerunner of today's widely used rotary unit.

Drilling went nicely at first, but treacherous quicksands soon began to cause trouble. With much difficulty, the work progressed until oil began to show in the slush pit on the morning of December 9, 1900. Guesses flew thick and fast on what the well might do. Some of the more optimistic people—among them driller Al Hamill—dared predict it might make 50 barrels a day, a really good well for that time.

Drilling continued, and the crew found hard going at about 880 feet. At this point, new equipment was needed and the men were tired. Everyone was sent home for the Christmas holidays and work was shut down.

On the following January 1, the crew was back on the job, and the well was put down to 1020 feet. There the drill bit seemed to hit an obstruction of some sort and kept grinding away without making downward progress. A new bit was sent for.

On the morning of January 10, 1901, the new bit was screwed on and the drillpipe was about 700 feet back down into the hole. Suddenly, mud began flowing strongly up through the rotary table and the crew was drenched. Sensing trouble, every man ran for his life—and barely in time. The drillpipe blasted up through the derrick like a gigantic spear, carrying the crown block (top of the derrick) with it. Then there was quiet. The crew, after a time, ventured back to view the wreckage. Everything was a mess; mud covered everything; some of the equipment was smashed. Disgustedly, the crew began shoveling away the mud.

Then, without warning, heavy mud again shot out of the hole with a blast like a cannon shot. After the mud came gas, then oil and rocks—all flung hundreds of feet into the air. In a few minutes, a heavy column of solid oil was hold-

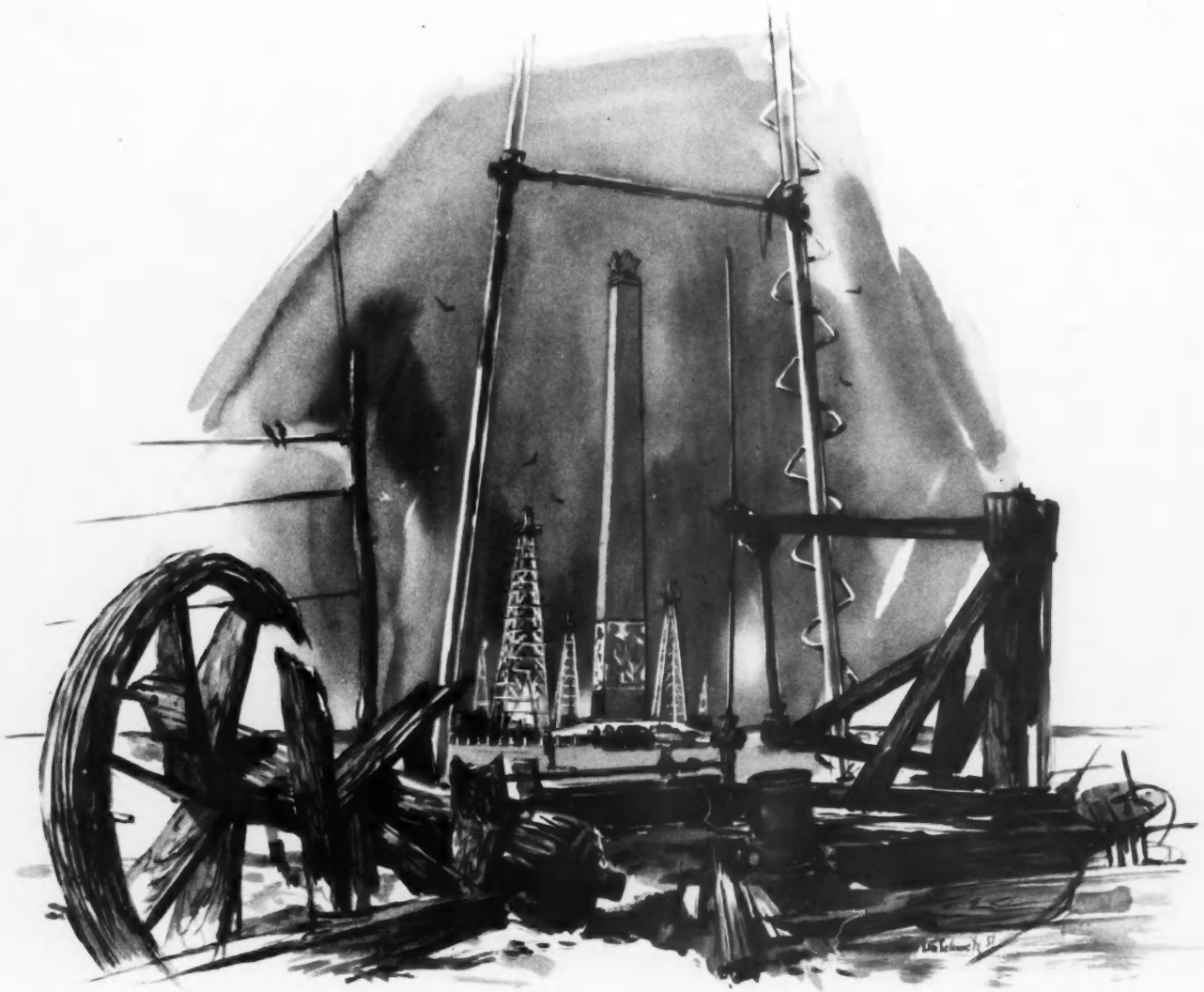
ing a steady flow more than twice as high as the derrick. Nothing like it had ever been seen before. The world had its first "gusher"—and the the people of America stood at the threshold of an entirely new and better way of life.

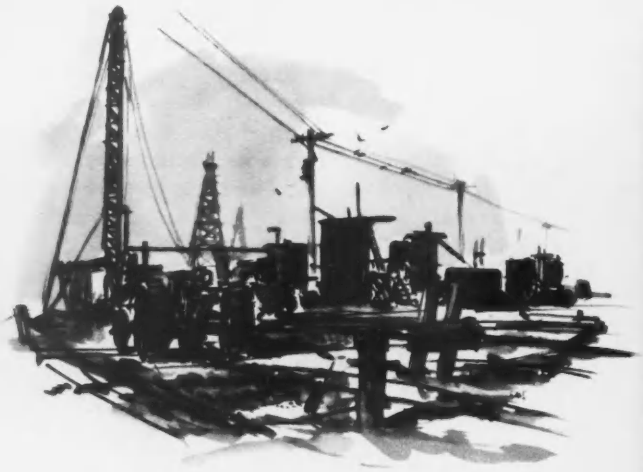
Before Spindletop, there had never been enough oil to allow a full-scale development of the Machine Age. Oil had been used as an illuminant and as a lubricant. The Spindletop discovery carried the American oil industry from the age of kerosene to the age of fuel oil, and opened the door for today's age of gasoline.

After Spindletop, the development of American industry went forward at an accelerated rate. With oil came automobiles . . . mass production . . . airplanes . . . mechanized farming . . . Diesel-electric trains . . . ships that cross the ocean in four days. Since Spindletop, Americans have produced more, had more, lived better than any other people in the world. The twin forces responsible for that advancement have been *Machines* and *Energy* to run them. With oil, Man has made more progress in the past 50 years than was made in the previous 2000.

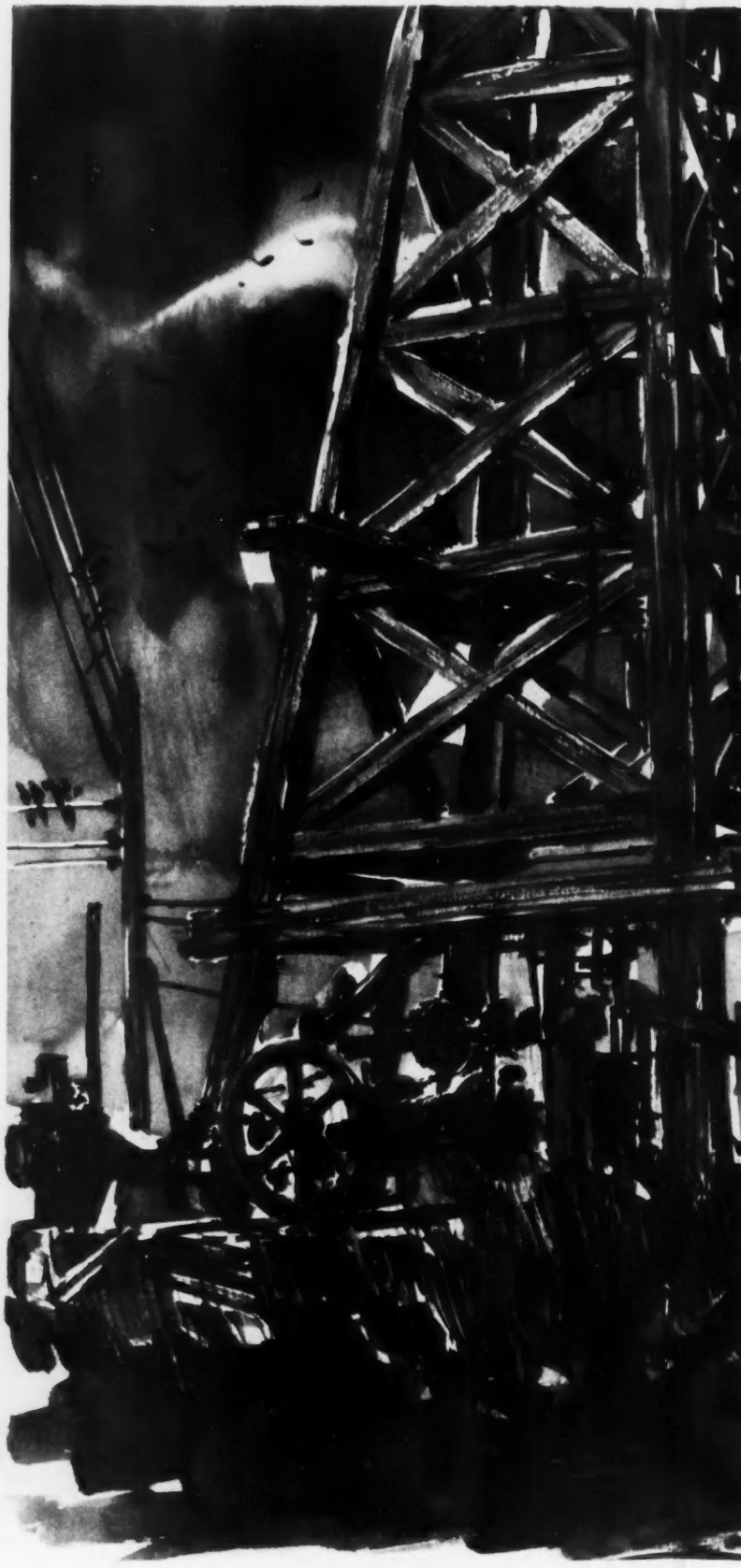
Even with the discovery of oil in such vast quantities at Spindletop, no one dreamed of the rate production would

A granite shaft, topped with the traditional Texas star, was erected in 1941 on the site of the Lucas discovery well.





Artist E. M. Schiwetz found Spindletop a colorful subject. After 50 years, the field is still producing. In the shadow of blackened wooden derricks, shiny steel ones stand today, providing a striking contrast of the old and the new.



have to be increased to keep step with demand. By 1909, the pre-Spindletop rate of production had just about tripled. Ten years later, that figure had doubled again, and the country was producing about a million barrels a day. Today, this country's production is about six times the 1919 rate—more than six million barrels a day! That, in itself, is a splendid tribute to the performance of the oil industry.

The aggressiveness and enterprise of the industry, operating under a system of free competition, have seen to it that this country has never lacked for oil, in peace or war. If the Spindletop discovery was important 50 years ago, it is even more significant today, when freedom-loving peoples all over the world are living under aggression or the threat of aggression. Spindletop was indeed a glowing chapter in the history of world progress!

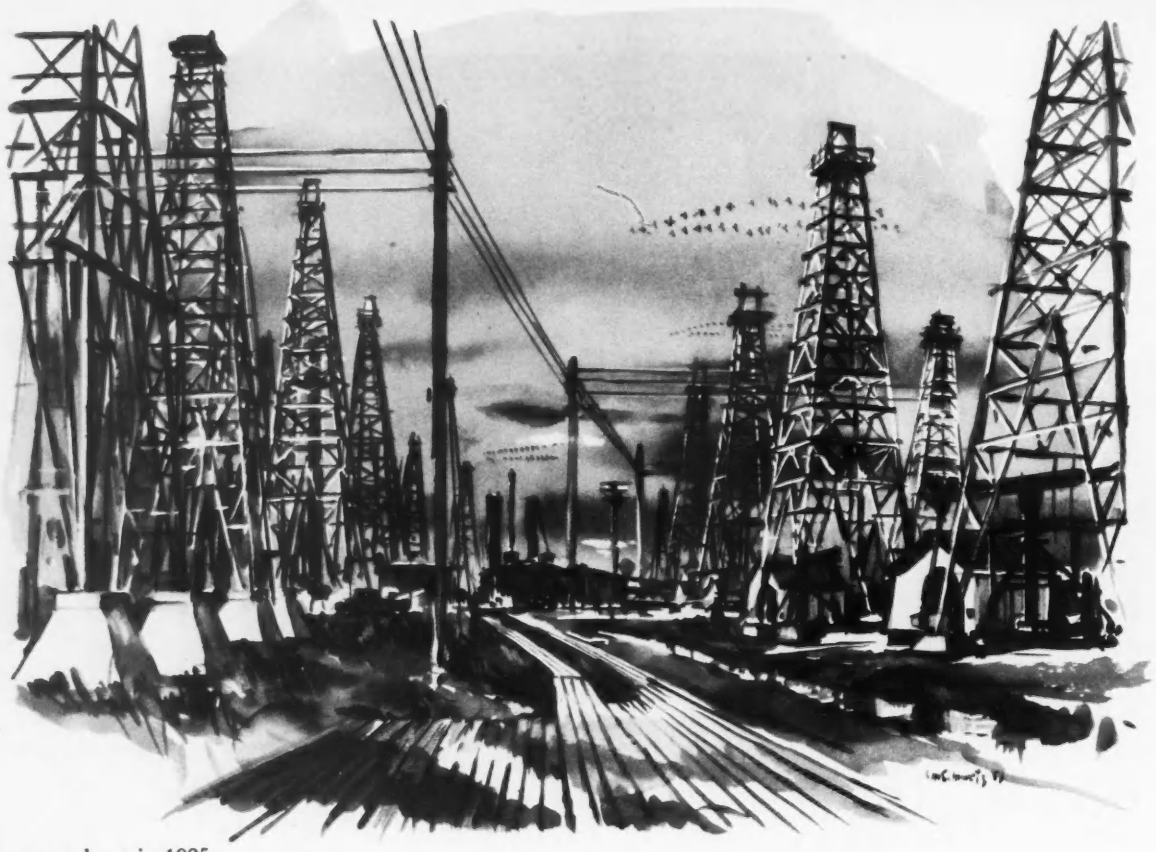
A Place of Leadership

On the basis of performance alone, Spindletop deserves a place of honor among oil fields. It has already produced more than 130 million barrels of oil, one of a handful of Gulf Coast fields to boast such a record. The birthplace of the modern oil industry, Spindletop enjoys the geologic distinction of being the first great salt dome field—and as such led to the discovery of other salt dome fields along the Gulf Coast.

Hundreds of oil companies sprang up at Spindletop; some of them grew and matured into industrial leaders of today. At nearby Beaumont and Port Arthur are huge plants of several companies which had their beginnings at Spindletop—Magnolia, Texas, and Gulf.

Capt. William Wiess, father of Humble's late president, H. C. Wiess, had an interest in the original lease on which the Lucas discovery well was drilled. H. C. Wiess was a youngster in school at the time, but later he took over the managership of his father's oil interests upon graduation

(Continued on Page 15)



Spindletop was reborn in 1925, when drillers struck oil in deeper sands on the flanks of the huge salt dome.

Earlier parts of Spindletop are a study in black and brown, with old and abandoned equipment giving an air of age and color to the field.

(Continued from Page 12)
from Princeton. It was here that he acquired his first experience in the oil industry, which he was to serve so well as a founder and vice president of Humble Oil & Refining Company in 1917 and as the Company's president from 1937 until 1948; in the latter year his death occurred after he had served briefly as Chairman of the Board.

The Contrasts of Spindletop

Others who founded Humble and helped guide it to its present position as the nation's No. 1 oil producer could trace their oil experience to Spindletop. Among these were W. S. Farish, R. L. Blaffer, Ed Prather, and W. W. Fondren. Farish, who became president of Humble and later of Standard Oil Company (N. J.), was a young Mississippi lawyer who came to Beaumont to represent a client and remained to enter the oil business for himself. Blaffer, son of a New Orleans coal merchant, came to Beaumont to buy fuel oil for a railroad and remained to become an oil operator. Fondren, who had gone to work in an Arkansas lumber camp at the age of 13, heard stories of opportunity at Spindletop. He journeyed there and found success for himself in the oil business.

The visitor to Spindletop today is not prepared for what he finds there. He may even be a bit shocked at the contrast between this and more modern oil fields. Spindletop and other fields born in the same era show tragic evidence of mistakes made during a time before oil became a science and an industry. There is no wide spacing of wells, as there is in fields discovered after the adoption of intelligent conservation practices. At Spindletop, derricks rub shoulders with one another, crowding for space. At one time, it is said that a man could walk across the entire field without stepping off derrick floors!

In the relatively compact space of some 300 acres atop the famous "Hill," a veritable forest of wells was drilled. This original production came from the *caprock*, so called because the producing formation was located at the top of the salt dome. Wells drilled into the caprock reservoir were fairly shallow, by today's standards, going down from 1000 to 1500 feet, or thereabouts.

A Second Boom

Spindletop, which had excited the world in 1901, still had important surprises up its sleeve. In the years after the Lucas discovery at the top of the dome, a conviction began to grow among oilmen that oil might also be found in deeper sands, *around the flanks of the dome*. The first well to test this conviction is said to have been drilled about 1917. It was a dry hole. A number of other such flank tests followed early in the twenties. These, too, were dry. Some people became discouraged, but the faith of a few remained unshaken. Drilling on the flanks continued.

It remained for Frank M. Yount, head of Yount-Lee Oil Company, to turn the trick and give Spindletop a rebirth, a second boom. In January, 1925, Yount drilled a 2456-foot well on the south flank of the dome. It was a dry hole. Undiscouraged, he drilled a second well to 2518 feet in November, 1925. This was the first deep producer, but it made only about 600 barrels a day. Then, in January, 1926, Yount drilled the big flank-producer that really got things going; a well that went down 2789 feet and flowed about 4900 barrels a day.

With these discoveries, Yount raised the curtain on the second act of the Spindletop drama. For the second time in a quarter century, the eyes of the world centered on Spindletop. The second boom went into high gear, and 1927 proved to be the most productive year in Spindletop's history. Since then, the flank fields have proved their importance by producing, according to one authority, just about the same amount of oil as the caprock, or old field. In time, the flank fields are almost sure to out-produce the old caprock field.

Can Spindletop do it again and produce a third boom? Only time will tell. There are those who say it can—and certain indications tend to support them. As recently as January, 1951, a wildcat well on the northeast flank (where no oil had been discovered before) was brought in, flowing about 100 barrels a day. It produced from sands more than 3000 feet below the original caprock field.

Spindletop Today

Spindletop still shows the scars of a time of reckless development, when the cry was "get the most oil out of the ground in the shortest possible time!" Modern fields, with their trim, attractive, pin-neat appearance, show the results of good housekeeping, orderly development, and controlled withdrawal of oil from the reservoir. Spindletop is a study in black and brown—black wooden tanks, soil red with rust and black with oil, abandoned and obsolete equipment lying about in twisted confusion, shapeless masses of pipes and timbers encrusted with the salt and scale of five decades. A pungent, but not unpleasant, odor of salt water and salty oil is everywhere. Here and there, a bit of casing protrudes at a crazy angle above the earth, rusting away in the salt air.

Strangely enough, one gets the impression of a certain stately dignity about Spindletop. It is almost as if the gaunt wooden derricks realize the part they have played in world progress, and are proud of it. There is about the field the air of a classic actor, too old and too proud to change his robes or his repertoire.

Field Still Producing

If there is a feeling of decadence and decay about the place, it is misleading. Spindletop is far from dead. Even in the old caprock field, drilling continues. In the shadow of blackened wooden derricks, shiny steel ones stand today, a striking contrast of the old and the new. Activity is everywhere—orderly, controlled activity. Here a well is drilled; there a workover job goes on. Oil field trucks, laden with supplies and equipment, kick up clouds of dust from the dirt roads. From a central pump-house comes the monotonous throbbing of engines, as pull-rods glide silently back and forth across the oil-soaked ground, to keep the pumping-jacks nodding.

There is plenty of life in Spindletop yet. About 170 wells (some old, some new), each producing an average of 13 barrels a day, keep the field going. In appearance, Spindletop may be a most unkingly monarch. But in the significance of its impact on our way of life, it has no peer.

State Lease 1679, Mississippi River 1

Last year Humble drilled more than 26 miles of directionally-controlled hole; one of these miles was beneath the Mississippi River

WHEN Humble sought to extend the limits of production for the Avondale, Louisiana, field last fall, the place chosen to explore lay beneath the swirling currents of the mighty Mississippi River. The lease was the State of Louisiana 1679—the bottom of the river some 12 miles west of New Orleans.

Experience has proved that oil fields or likely-looking prospects seldom have any respect for the surface conditions under which they lie; they are equally at home under boggy swamp, ocean, mountainside, and desert. The rarity of solid ground over an oil prospect in Southern Louisiana kept Mississippi River 1 from being too much of a problem.

Because of the nearness of O' Man River, the problem was watched with interest. To erect a rig in the middle of the river might create a hazard to navigation. There was a simpler way than constructing a platform to battle the river's currents.

Mississippi River 1 would be drilled directionally—from a dry land location just beyond the river levee. The target area was a circle 200 feet in diameter 1,160 feet north from the rig and 8,200 feet down.

Rig 28 was moved in to do the job. The course of the well was plotted, and a program was set up to keep the hole within 100 feet of the course all the way to the objective. When directional drilling was begun at about 3,600 feet, the hole was 38 feet southwest of the surface location—in the wrong direction. A spud bit and two whipstocks were used to guide the hole in a gigantic spiral out under the river to 6,594 feet, where the final whipstock was set. When the bit reached the true vertical depth of 8,200 feet, a survey showed the hole to be exactly 1,160 feet from the surface location and only 50 feet from the objective—easily within the target area. Later on, the well was abandoned as a dry hole after it was drilled on to 9,396 feet, where the bottom was 1,329 feet from the location, out under the river.

This wasn't the first time Humble crews have drilled under the Mississippi River, for the Company produces oil from wells beneath the river at Potash, some 40 miles downstream from New Orleans. Directionally-drilled wells from special earth-filled islands solved the problem of 20-foot flood waters of the Atchafalaya River at Bayou des Glaise during flood season. Oil is produced from directionally-drilled wells in a large part of the fields in which Humble operates in Southern Louisiana.

In seeking to find enough new oil to replace that consumed every day, the exploratory efforts of the oil industry have invaded the most remote swamps and gone out into the coastal waters of Louisiana. There, where conditions above and below ground make oil-finding difficult, Humble has drilled 52 directional wells in the past five years. In 1950 alone, Humble drilled approximately 26 miles of directionally controlled hole in the Louisiana division. Eleven of those 26 miles of directional hole were drilled from the Company's offshore platforms.

Obviously, where locations are extremely expensive and difficult to reach, directional drilling makes it possible to explore a greater area for less cost than if a new location were required for each well. Seven wells have been drilled to test the structure beneath the Company's largest platform off Grand Isle; three of them are oil wells. In some places along the Louisiana coast, directional drilling has permitted drilling wells to four leases from one platform located near their common corner.

Humble's Rig 41 spent eight months of 1950 drilling four wells from one drilling platform off Caminada Pass, Louisiana. A total of 31,858 feet was drilled from one surface hole, 23,889 feet of it drilled directionally. The last well, State Lease 799, D-4, was Humble's deepest offshore well, measuring 13,882 feet. All four wells were expensive dry holes drilled in an effort to establish production on the northwest flank of the Caminada Pass salt dome.

In the South Timbalier area, 3 miles offshore and 45 miles southwest of Grand Isle, Rig 39 drilled a vertical dry hole to 13,216 feet. Well A-2 was deflected from the first well bore to a point 5,096 feet away from the surface location, at a depth of 13,519 feet. This deflection, only 184 feet less than a miles, is the greatest of any Humble well. The maximum drift angle was 36 degrees from vertical; the average 25 degrees. Normally a "vertical" hole is kept within 3 degrees of vertical.

Well A-3, deflected from the A-2 well bore, found oil at 12,111 feet; A-2 was dry. It is interesting that these two wells crossed a common fault; but A-3 cut the fault higher in the section and found oil trapped against it.

H. John Eastman, a Californian, developed the technique of controlling the direction of a twisting drill bit 20 years ago in the Huntington Beach field in California, where wells

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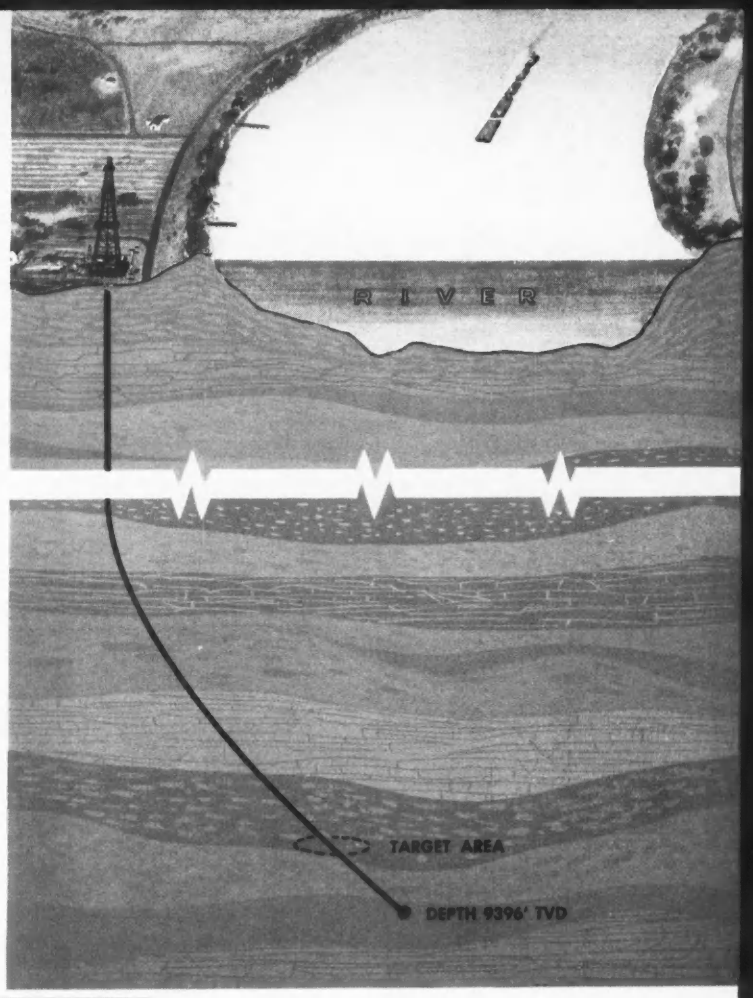
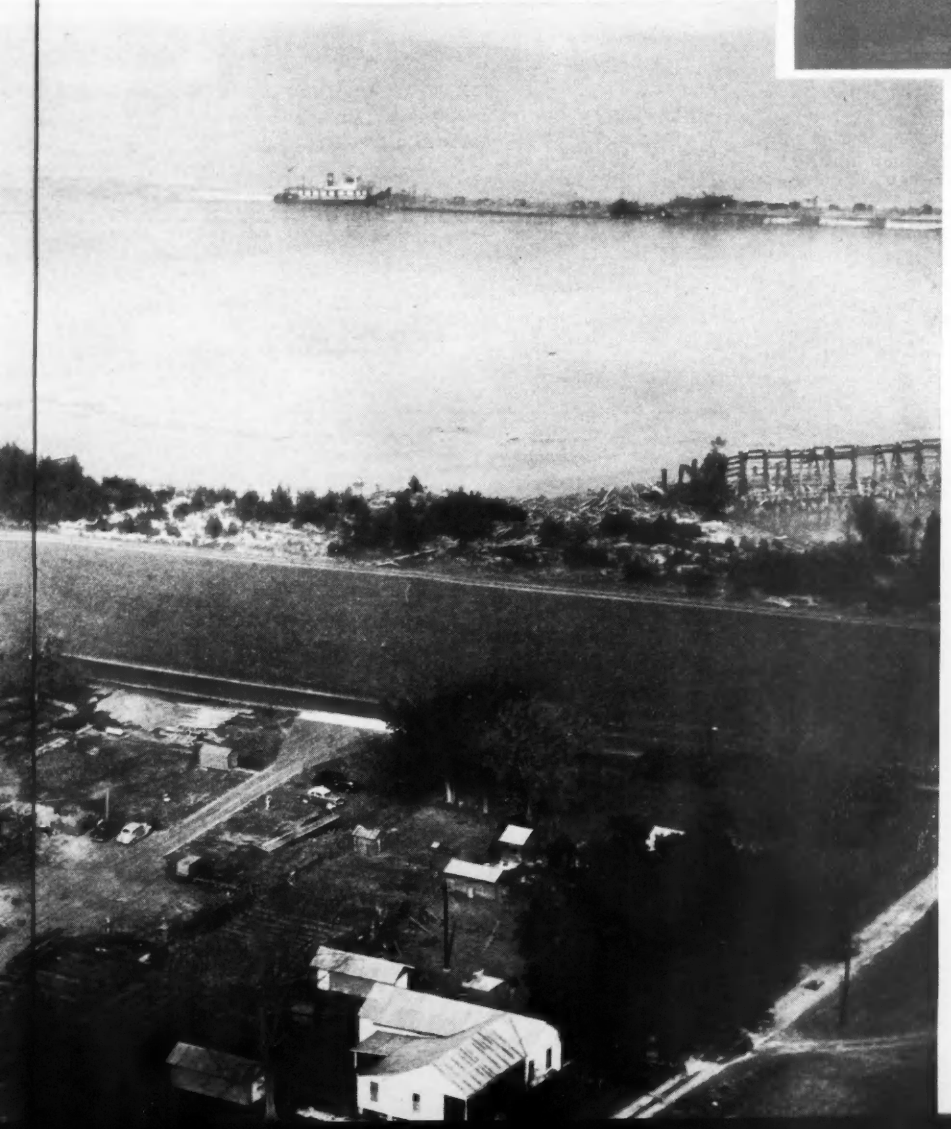


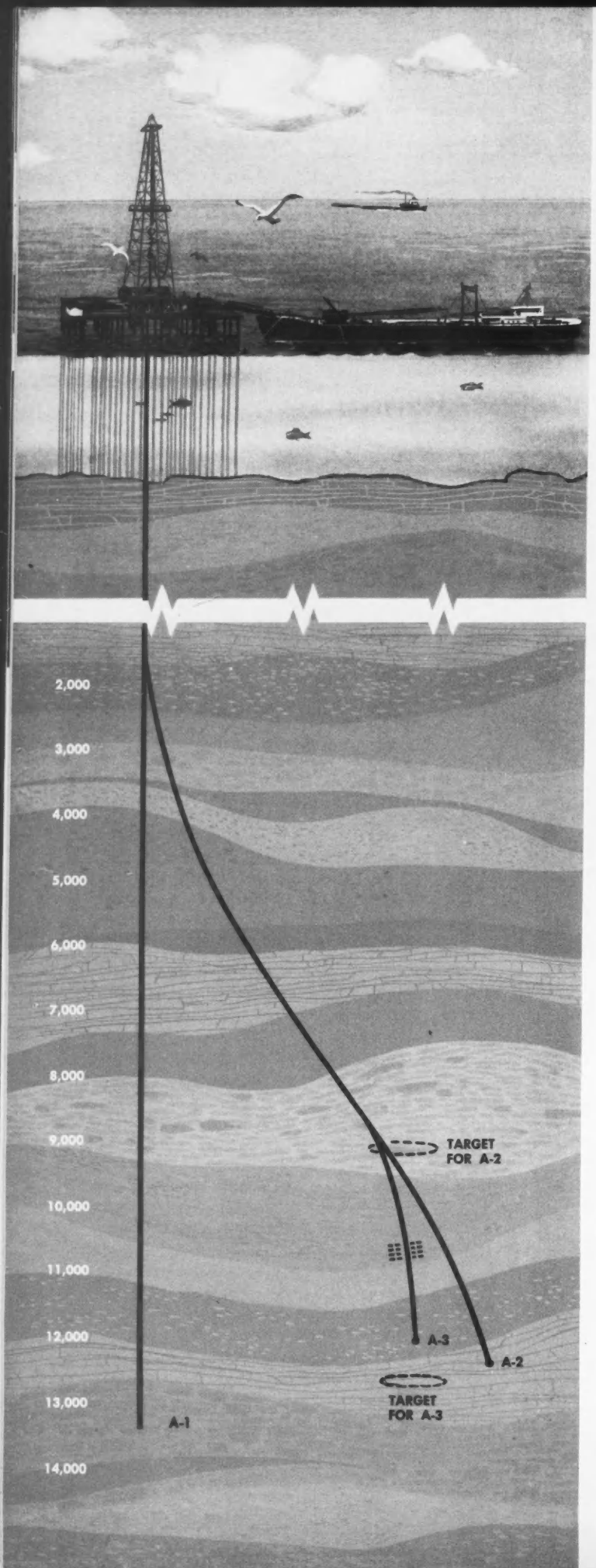
● An artist's sketch of the course of the Mississippi River 1 shows how the drill bit was deflected out under the river after it reached 3,600 feet. The program set up forth well called for an increase in the drift angle of 2½ degrees for each 100 feet until the drift angle was 15 degrees. That angle was then maintained until the target depth (8,200 feet true vertical) was reached.

Both vertical and horizontal scales have been exaggerated in this sketch to give an idea of the actual setting. Subsurface strata are diagrammatic only.



● Rig 28 drills beside the Mississippi River levee. The location is about 600 feet from the water in the photo; the objective is roughly beneath the barges. At this point the river is about a mile wide.

The broad grassy expanse of the levee side makes it appear that the cows are grazing on level land.



were deflected out under the Pacific Ocean. The first notable application in Texas was spectacular. In 1933, Mr. Eastman was invited by Humble to direct the drilling of a directionally-controlled well to kill a wild well in the Conroe field. (See "Target Below," THE HUMBLE WAY, July - August, 1945).

Four Principal Uses

Since that time, directional drilling has been widely used, particularly in the Gulf Coastal area where water so often covers locations. Directional drilling helps solve problems of these four general types:

(1) For drilling wells to reach formations which lie beneath inaccessible surface locations, such as the Mississippi River or the state capitol of Oklahoma.

(2) For exploring formations in different directions from a single location, such as an offshore platform.

(3) For "sidetracking" (plugging back and deflecting the hole) around junk or a bad section of the hole to save drilling another well from the surface. Sidetracking is extensively used, too, in exploring the flanks of salt domes in the Gulf Coast area.

(4) For drilling relief wells to the bottom of wild wells for the purpose of killing the well out of control. Since the Conroe well, a number of wild wells have been brought under control by pumping heavy drilling mud or water through directionally drilled relief wells into the bottom of the wild well.

Directional drilling is more expensive than just putting a hole down. Surveys to check the drift of the hole must be made often, and drilling must be done carefully. The drillers cannot use too much weight, or they will tend to increase the drift angle; if they use too little weight, the hole will tend to straighten out. Directional drilling calls for closer control of the well, and slower drilling to maintain that control.

The fact that Humble's State Lease 1679, Mississippi River 1 turned out to be a dry hole was not unusual. Whether drilled straight down or directionally, dry holes are often the result when attempting to determine the boundary of a producing area.

Humble's State Lease 1428, Well A-2, diagrammed here, was directionally drilled to within 184 feet of a mile from vertical! This is the greatest deviation in any Humble well. The location is 13 miles off the Louisiana coast.

Well A-1 was drilled vertically to 13,216 feet. Then well A-2 was deviated from the A-1 well bore at 1,500 feet and aimed at an objective 4,000 feet away at a true depth of 9,000 feet. The well was drilled on to a total measured depth of 13,519 feet and a deflection of 5,096 feet from the surface location.

Well A-3 was sidetracked from the plugged A-2 well bore at 9,746 feet measured depth, and directed toward an objective at 12,500 feet (true vertical depth). But A-3 crossed a fault higher in the section than had been found in A-2, and found oil trapped against the fault. The well was drilled on to 13,015 measured depth and completed at 12,111-114 feet as an oil producer.

In the illustration, vertical and horizontal scales are exaggerated; subsurface strata do not indicate actual formations.

Spectacular spray of water follows the sharp jolt underfoot of a seismograph explosion. Crewmen in dynamite truck, left, instrument truck, and loading rig await the shot results. Operator and his assistant wait in the shadow of instrument truck.

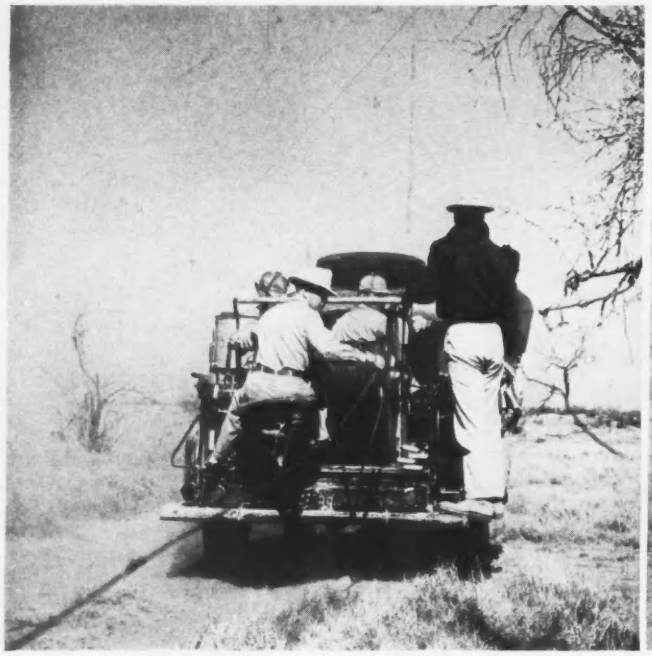
SHOOTING ON THE BAR S

Party 23 Seismographs a Large West Texas Ranch

FIFTEEN miles north of Big Lake, Texas, Humble's seismograph party 23 is working in the rolling grasslands of the Bar S ranch, one of the largest in West Texas. The Bar S, whose 235 sections of land cover much of eastern Reagan and western Irion Counties, is rolling mesquite prairie, occasionally studded by scrub cedar and broken now and then by a windmill and tank. The ranch has been owned by the Sawyer Cattle Company since 1883, and is 24 miles long, 17 miles wide.

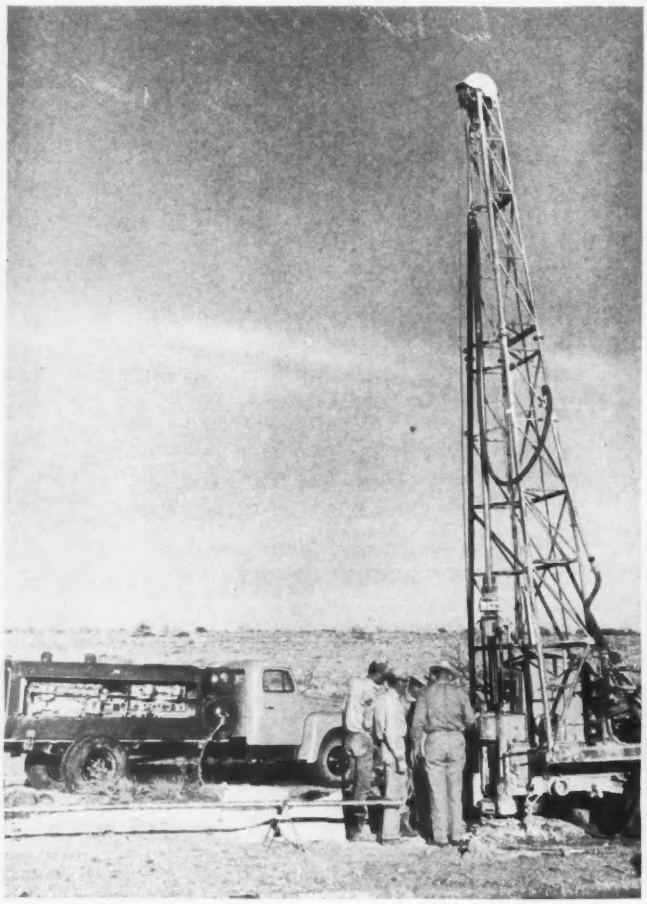
Party 23 is attempting to get a "picture" of the folds of formations as far down as the Ellenburger limestone or the basement beneath it, which here is around 10,000 to 11,000 feet down. The ranch is not far northeast from the famed Big Lake field, which was the first (1923) major oil field discovery in West Texas.

To get their picture, the 14 men of Party 23 survey great loops of land and make a seismic picture every 1,200 feet. They use energy waves from dynamite charges which bounce off dense formations far below. As the waves return to the surface small seismographs detect the shock and transmit it to the recording instrument truck. The record of the shots is computed and transferred to maps, where the contours of the dense formations may indicate the location of possible oil-bearing structures.

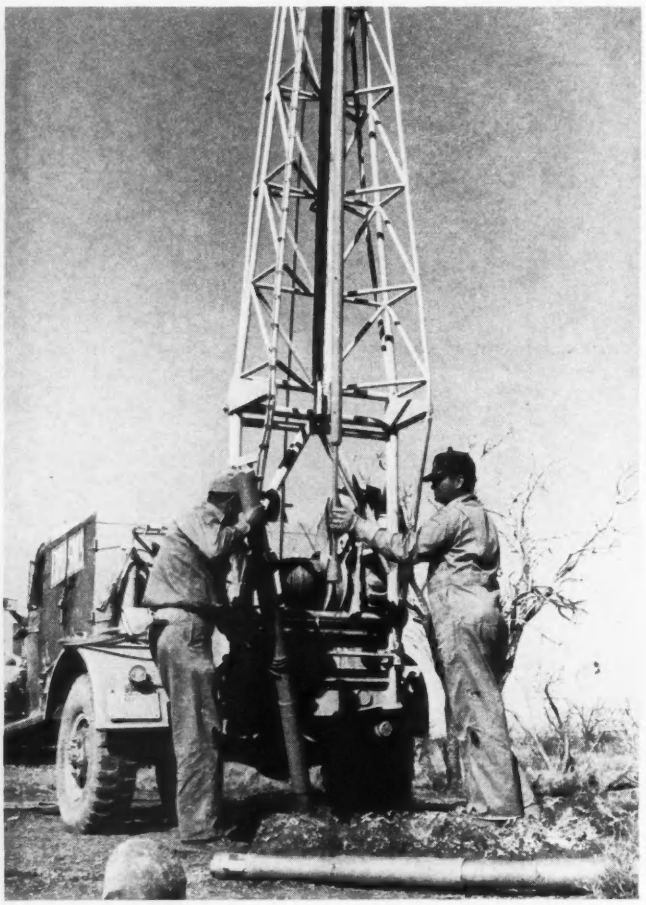


Pickup line 1,200 feet long is unreeled from truck making ready for shot. Man standing on rear holds several pickups in hand.

Each pickup, a silver cylinder 2 inches in diameter and 5 inches long with a blade on one end, is stuck in ground and connected.



Truck-mounted compressor supplies air for drilling where water is scarce; usually the first 235 feet can be drilled with air.



Dynamite in cardboard cartons is dropped into the hole and tamped. Concrete plug in foreground will cover hole later on.

Typical West Texas problems make the operations of Party 23 interesting and, in some cases, unusual. For example, one of the big jobs is drilling the shot holes in the hard surface formations. It takes five drills working continuously to keep ahead of the one shooting crew. A shot hole in this country is 4½ inches in diameter and from 250 to 325 feet deep—eight hours work for a good truck-mounted drill.

Water is extremely scarce and expensive. Some holes, if drilled with water, might take up to 30 truckloads of water. Party 23 uses compressed air for drilling most of their holes. A heavy-duty truck-mounted air compressor supplies 325 cubic feet of air per minute at 40 pounds per square inch pressure at the drill bit to blow cuttings out of the hole. Ordinarily they can drill about 235 feet "dry."

Below a limestone stratum, the drills must use water for drilling about 40 feet into a wet clay. Several loads of water are needed to finish the hole, though some water comes into the hole from the clay. Water in the hole tamps the shot when it is exploded.

As the shooting crew moves up, the cable truck strings out the special pickup cable, and pickups are set out every 10 feet along the ground. For each shot, 132 pickups are put out, 66 spread over 1,200 feet on opposite sides of the hole. Each pickup is a seismograph in a small aluminum cylinder about 2 inches in diameter and five inches long, with a blade on one end. The blade is pushed into the ground; the cable on the other end is attached to the pickup cable.

After the operator fires the shot and the geyser of tamping water has spurted into the air, the operator and his assistant check the "picture"—the strip of paper with 12 wavy lines upon it. Each trace, as the lines are called, is actually the combined reaction of 11 seismograph pickups, indicating the reflection of shot energy at 200-foot intervals. Differences in time required for the shot energy to rebound, measured in hundredths of a second, indicate subsurface contours.

Certain beds give better reflections than others, and usually the computers pick a "key" bed and plot its contours. When all complete, the seismograph information is correlated with all other available data to make up the geologic estimate of the area.

Ready signal from assistant operator must be answered by all men before shot is fired from special panel on instrument truck. Truck was built by Humble men.

Shot results are checked within a few minutes after shot is fired, before moving to next hole. Party chief, right, checks picture with operator, assistant (left).

Forty Employees Retire

SINCE these columns last reported, 40 long-time employees of the Humble Companies have retired. All of these employees have more than 20 years' service with the Company.

Humble Pipe Line Company—Joseph G. Blake, engineer at Eckert Station, retired December 29 after almost 29 years' service. Mr. Blake worked for the Standard Oil Company of Louisiana and Standard Pipe Line Company before being employed by Humble in 1926 as timekeeper.

George E. Cole, engineer in Cisco District, retired December 31 after more than 30 years' service. Mr. Cole began work with Humble as a clerk in the Warehouse Division. On retirement he plans to buy a small farm and to raise chickens and garden.

William F. Fitzgerald, engineer at Sugarland Station, retired December 31 after more than 30 years' service. He was employed in 1919 as straw boss and later worked as assistant foreman, stock gauger, district foreman, ditch inspector, laborer, pumper, engineer, and connection foreman. He helped to build the first main line from Ranger to Webster in 1919.

William H. Gann, engineer at Albany Station, retired December 31 after more than 26 years' service. His first nine days with the Company were spent as a laborer; then he became engineer-oiler. He plans to buy a home near Brownwood and raise chickens and a garden on retirement.

Thomas E. Green, Sr., engineer at Hearne Station, retired November 22 after more than 30 years' service.

Pinckney B. Griffin, Sr., engineer in Cisco District, retired February 9 after 24 years' service. He came to work for Humble as a pipeliner and later worked as oiler, oiler-engineer, and diesel engineer. His hobbies include hunting and fishing.

Charles F. Hise, district gauger in Cisco District, retired December 31 after almost 31 years' service. He began work as a roustabout-pumper for Humble in the Ranger Field in 1918, and he worked there during the Ranger "boom." His hobbies are landscaping and improving his home.

James A. Mace, engineer in the Hull District, retired December 29 after more than 27 years' service. He worked for the Standard Oil Company of Louisiana before being employed by Humble as a laborer. Later he worked in various engineering capacities.

Wiley E. Moreland, engineer at Station B, retired December 1 after more than 23 years' service. Mr. Moreland started to work with the Company as a laborer at Putnam. On retirement he plans to operate a 71-acre farm five miles south of Stephenville.

Edward P. Randle, pipeliner at Lytle Station, retired January 30 after more than 24 years' service. He started to work for Humble at Bruni as a carpenter and later worked as line walker, stock gauger, and pipeliner. He plans to do carpentering on retirement.

Victor H. Roberson, engineer at Groesbeck Station, retired December 31 after almost 29 years' service. All of Mr. Roberson's service has been spent at Groesbeck except for a month and a half at Mexia.

Otto Tiegs, pipeliner at Webster Station, retired December 31 after more than 23 years' service. Prior to his employment in 1927 as a laborer, he worked for the Company for several short periods between 1924 and 1926.

George S. White, district gauger at Friendswood Station, retired December 31 after more than 31 years' service. He began work with Humble at West Columbia as gauger and later worked at Orange, Hull and Friendswood. He plans to operate his 160-acre ranch near Hugo, Oklahoma.

James B. Wilson, operating chief engineer at Alanreed Station, retired

More Than 157 Years Service With Humble

Five Directors of Humble Oil & Refining Company whose total service exceeds 157 years are presented with 30-year watches by L. T. Barrow (left), Chairman of the Board. Left to right, watch recipients are: Hines H. Baker, president; D. B. Harris, vice-president and treasurer; David Frame, vice-president; J. A. Neath, vice-president; and Rex G. Baker, general counsel. Between December 1, 1950, and February 1 of this year, 430 Humble employees who have completed 30 years service and annuitants who have retired since November 1, 1950, have received gold watches.

December 15 after almost 31 years' service. He started with the Company as an oiler and later worked in various capacities. He plans to garden and raise rabbits at his new place in Pleasant Valley near Amarillo.

Production Department—Reuben Andrews, rotary driller at Pickton, retired December 31 after more than 25 years' service. Mr. Andrews started to work for the Company as helper and became driller in 1932. On retirement he will supervise some chicken raising at Mauriceville, Texas.

John H. Brumley, lease pumper-gauger at Conroe, retired November 11 after more than 24 years' service. He began as a roustabout with the Company at Cotton Valley. Later he worked at Kilgore and Raccoon Bend. He owns a home at Carthage where he plans to raise chickens and catch up on his fishing.

Raymon R. Cox, toolpusher at Raccoon Bend, retired January 23 after more than 23 years' service. He started with the Company as a rotary driller and later worked as cable toolpusher, rotary helper, roustabout, and toolpusher. Mr. Cox intends to raise cattle on his 215 acres near Hamilton, Texas.

Marshall H. Clouser, witness gauger at London, retired January 5 after more than 24 years' service. He went to work for the Company at Pampa as a blacksmith. He also worked at Pyote and Jal before being transferred to London in 1931. Mr. Clouser intends to buy a place and farm.

Ben Palmo, assistant district superintendent at Luling, retired December 31 after more than 30 years' service. Mr. Palmo was employed at Stratton Ridge as a rotary helper. In 1945, he was named assistant district superintendent at Luling. He will live in Luling where he recently completed a new home.

Thomas E. Purcell, toolpusher at London, retired December 25 after more than 33 years' service. He came to work for Humble at Goose Creek as helper and later worked as driller before becoming toolpusher. On retirement he plans to operate a ranch at Teague, Texas.

Wesley M. Rawles, division civil engineer in the East Texas Division Office, retired January 18 after 28 years' service. Mr. Rawles was employed at Smackover as a roustabout and later worked as watchman and timekeeper. His special interests are sports and people. He plans to do some contract surveying on retirement.

Carl E. Rushing, toolpusher at Avery Island, retired December 31 after more than 25 years' service. He began work with the Company at Eldorado, Arkansas, as rotary helper; he became toolpusher in 1933. For the present he will maintain his home in New Iberia. Later, he hopes to return to Eldorado and build a home and raise cattle.

Joseph W. Shook, rotary fireman at Raccoon Bend, retired November 16 after more than 23 years' service. He was employed at Goose Creek as a laborer and later worked in various drilling capacities. He plans to build a home at Sheridan, Texas, and raise cattle and chickens on his 120 acres.

Lem F. Smith, toolpusher at Imogene, retired December 31 after more than 28 years' service. He started his career with Humble at Orange as rotary helper. His entire service has been with the drilling group. He will live on his farm near Jourdanton.

Fritz C. Waechter, carpenter at Pampa, retired February 19 after more than 25 years' service. All of Mr. Waechter's service with the Company has been spent as carpenter. He intends to move to Amarillo so that he can be near his farm in Deaf Smith County.

Baytown Refinery—Doss T. Cheshire, community house attendant, retired January 10 after more than 25 years' service. He started with the Refinery in the Pipe Department. During World War II, he was in charge of plant protection at the Baytown Ordnance Works. He intends to garden and care for fruit trees and to catch up on his hunting and fishing.

May D. Fransen, stillman first, retired December 31 after more than 24 years' service. He started to work for the Refinery with the boilermakers as a helper. His special interests include fishing and hunting.

John L. Franks, helper third, retired December 21 after more than 23 years' service. Mr. Franks started to work with Humble Pipe Line Company and transferred to the Refinery in 1927. He intends to assist his son-in-law in a hardware store at San Angelo and work at his hobby, ceramics.

Howard E. Humphrey, foreman, retired December 22 after more than 31 years' service. Mr. Humphrey came to the Refinery from Standard Oil Company (N. J.). All of his service has been with the Pumping and Gauging Department at Baytown.

Leones Lindsey, sampler first, retired November 1 after more than 21 years' service. He began work with the Refinery as a laborer.

Gilbert A. Meyer, rigger first, retired November 1 after more than 30 years' service. All of Mr. Meyer's service with the Company has been in the Rigging Department of the Refinery.

Luther S. Peterson, helper, retired November 3 after 30 years' service. His entire employment with the Company has been in the Rigging Department of the Refinery. He plans to garden and raise chickens in retirement.

Albert Solis, separator pumper, retired December 22 after more than 30 years' service. Mr. Solis began work with the Company in the Labor Department of the Refinery. He will operate a fishing camp near Picketts Bayou in Liberty County.

Sales Department—William M. White, watchman at the Houston Bulk Station, retired December 1 after more than 35 years' service. Mr. White worked for the Bonner Oil Company before coming to the Humble Company. He plans to raise cattle, goats, and sheep on a small ranch at Dripping Springs, Texas.

Houston Office—Robert C. Clampitt, accountant in Production Accounting, retired December 1 after more than 30 years' service.

Joseph A. Collerain, supervisor of Insurance and Files Division in the Comptrollers Department, retired December 31 after more than 29 years' service. Mr. Collerain started to work for the Company as an auditor. In 1945 he was made administrator of the Insurance and Files programs of the Humble Companies. He helped to organize the Humble Credit Union and was its first treasurer and manager. He held offices in both state and national credit union organizations. In retirement he plans to travel, fish, hunt, and raise stock on his farm in Fayette County.

(Continued on Page 24)

By the way . . .

Oil Woman of '51

Miss Inez Lord Awty, secretary in Humble's land division at New Orleans, has been named the outstanding woman in the oil industry for 1951. She was presented on January 10 at Beaumont by John W. Newton, vice president of Magnolia Petroleum Company, chairman of the Spindletop 50th Anniversary Commission, which sponsored the award.

Miss Awty was named for her work in establishing Desk and Derrick clubs throughout the country. Club membership includes women employees within the oil industry.

(Continued from Page 23)

John P. Hogan, senior supervisor Internal Auditor in the Comptrollers Department, retired November 1 after more than 29 years' service.

Gilvie Hubbard, lawyer in the Law Department, retired December 31 after more than 24 years' service. Friends gave him a traveling bag, desk set, and a dinner in his honor on retirement. He will open a law office and look after his ranch and other interests.

Oscar P. Lynch, Division H buyer in the Purchasing Department, retired December 31 after more than 31 years' service. He started to work for the Company as an automobile mechanic, and in 1922 he became garage superintendent. He joined the Purchasing Department in 1945. Among his special interests are hunting and fishing.

Robert C. Parsons, assistant chief dispatcher in Crude Oil Dispatching, retired December 31 after more than 24 years' service. Mr. Parsons began in the Houston Office as telegrapher and later served as dispatcher and relief assistant chief dispatcher.

Deaths

SINCE the last issue of THE HUMBLE WAY, 19 active employees and one annuitant have died.

Active employees who have died are: Murville R. Alleman, 53, blacksmith first at Baytown Refinery, on January 16; Axel H. Anderson, 64, division electrical foreman in the West Texas Division Office, on February 10; Paul D. Buteaux, Sr., 30, rotary fireman at Bayou Sale, on November 29; Audley D. Gaston, 64, senior mechanical engineer at Baytown Refinery, on December 26; Floyd S. Gee, Sr., 53, assistant district superintendent at Longview, on January 26; Luther V. Hamilton, 52, lease pumpergauger at Galveston Bay, on December 31; Edgar A. Hoff, 47, roustabout at Katy Gas Cycling Plant, on December 10; Louis D. Lock, 36, pipeliner at Kemper Station, on February 11; Chester H. Lundt, 53, chief engineer of Humble Pipe Line Company, on December 19; William B. McGary, 35, accountant in the Sales Department Houston Office, on January 30; Guy R. Rawlins, 63, price clerk in Warehouse Accounting Houston Office, on January 3; James W. Richardson, 56, pumper heavy duty at Pampa, on February 6; Katherine F. Ricks, 26, bookkeeping machine operator in Production Accounting Houston Office, on January 24; Leroy H. Schlosser, 41, local manager Sales Department Corpus Christi Office, on January 25; Ray G. Scoggin, 28, rotary helper at London, on December 21; Hezekiah W. Scott, 42, janitor at Specialty Products Manufacturing Plant, on January 8; Joseph G. Smith, 45, junior engineer in Production Research Houston Office, on December 19; Lewis R. Spoon, 45, stock gauger at Station A West Texas Division, on January 20; John F. Walker, 60, district gauger at Cisco, on December 12.

Annuitant Labron L. Hinton, 59, guard at Baytown Refinery before his retirement, died on January 1.

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HUMBLE OIL & REFINING COMPANY

P. O. BOX 2180, HOUSTON 1, TEXAS

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The Cover painting by E. M. Schiwetz is of famed Spindletop field today. It is one of Schiwetz's portfolio on the famous field, accompanying those on pages 11-14.

Transport and van leave San Antonio Products Terminal with supplies for a bulk station many miles away. (See "Humble Products . . ." Page 4.)

Esso Extra
GASOLINE
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Big Job Ahead

The petroleum industry faces its biggest job of all time in this year of 1951, and fortunately for America, the industry is better prepared than ever before to meet this challenge. The oil needs of the accelerated defense program, added to the record requirements of the daily life of our people, will bring about a demand this year for petroleum and petroleum products of more than 7,000,000 barrels daily.

Because the oil industry has vigorously kept up its search for oil, and has invested more than ten billion dollars since 1945 to expand its facilities, America will have the oil it needs to keep the wheels of its industries turning and to provide for our national security.

HUMBLE OIL & REFINING CO.